

Mongolia - Property Rights - Peri-Urban Rangeland Leasing

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Overview

Identification

COUNTRY

Mongolia

EVALUATION TITLE

Property Rights - Peri-Urban Rangeland Leasing

EVALUATION TYPE

Independent Impact Evaluation

ID NUMBER

DDI-MCC-MNG-MULTI-PURP-2018-v1

Version

VERSION DESCRIPTION

Edited clean data for internal use only

Overview

ABSTRACT

This metadata file combines three separately-evaluations which are part of one entity. They include Land Productivity, Phase I, and Phase II.

Productivity

As part of monitoring and evaluation activities, the Millennium Challenge Corporation (MCC) and Millennium Challenge Account-Mongolia (MCA-M) carried out an impact evaluation that examined how the securing of long-term land use rights and provision of infrastructure and training through PURP affects not just livestock herding efficiency and productivity, but also environmental degradation and rangeland quality in peri-urban areas. In support of the rangeland quality component of the evaluation, MCC signed an agreement with the United States Department of Agriculture (USDA). Under this agreement, USDA provided technical advice and support to MCC regarding the monitoring and evaluation of pastureland and oversaw a local land quality contractor that carried out evaluation activities including the collection of baseline and follow-up data, as well as the training of local technicians and officials in sustainable land quality monitoring.

Methodology: Propensity Score Matching: Randomization

Phase 1

This study is an impact evaluation on the overall effect of the PURP on both project recipients and their neighbors. Key outcomes are household agricultural income, milk yields from cattle, and restriction of herd size to the carrying capacity of the land. A separate but coordinated study will examine the long term effect of the project on land degradation patterns. In Phase 1 areas, eligible applicants to the project went through an extensive screening process, including a requirement to obtain permission from all neighbor households, and all groups that passed through this process were admitted into the project. A comparison group was created through propensity score matching, using households from three populations: 1) applicants who did not pass the full screening process and so were rejected from the project, 2) neighbors of accepted and rejected groups, 3) a random sample of herder households from soums where the project was being implemented.

Methodology: Propensity Score Matching: Difference in Difference

Phase 2

This study is an impact evaluation on the overall effect of the PURP on both project recipients and their neighbors. Key outcomes are household agricultural income, milk yields from cattle, and restriction of herd size to the carrying capacity of the land. A separate but coordinated study will examine the long term effect of the project on land degradation patterns. In Phase 2 areas, eligible applicants to the project were entered into a lottery and half of them were randomly selected to

become project beneficiaries. Thus a very clean control group was created to determine the causal impacts of the project.

Methodology: Randomization

EVALUATION METHODOLOGY

Propensity Score Matching, Randomization

UNITS OF ANALYSIS

Productivity

Individuals, herder groups

Phase 1

Households

Phase 2

Individuals, households

KIND OF DATA

Sample survey data [ssd]

TOPICS

Topic	Vocabulary	URI
Land	MCC Sector	

KEYWORDS

peri-urban land, livestock management, productivity, farm income

Coverage

GEOGRAPHIC COVERAGE

Productivity

The peri-urban areas included 57 soums and districts located in five aimags and one city. Approximately 387 serviced tracts of pasture land between approximately 500-1500 hectares (grass-fed livestock system) and 100 hectares (intensive system) are being identified for approximately 15 year length project leases.

Peri-Urban Rangeland

Phase 1 of PURP consists of three peri-urban areas, surrounding the three largest cities in Mongolia: Ulaanbaatar, Darkhan, Erdenet.

Phase II of PURP consists of two peri-urban areas. The first is the area surrounding the city of Choibalsan in Dornod aimag, within 45 km of the city. The second is surrounding the cities of Arvaikheer and Kharkhorin in Uvurkhangai and Arkhangai aimags, and consists of parts of 10 soums.

UNIVERSE

Productivity

Herder groups in intervention areas

Phase 1

Herder households in rural Mongolia, in the areas around Ulaanbaatar, Darkhan, and Erdenet cities.

Phase 2

All households that were members of the 328 herder groups that applied to the PURP in the Phase II areas. And two neighbor households of these groups that lived within 2 km of the lease area boundaries.

Modification for Wave 2:

Sampling of neighbor households was extended to 5 km distance from lease area boundaries, due to low rates of successful neighbor interview in the baseline survey.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
Mongolian Society for Rangeland Management (MSRM)	Productivity
Innovations for Poverty Action	Phase 1 & 2

FUNDING

Name	Abbreviation	Role
Millennium Challenge Corporation	MCC	

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Metadata Producer

DATE OF METADATA PRODUCTION

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DDI DOCUMENT VERSION

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DDI-MCC-MNG-MULTI-PURP-2018-v1

MCC Compact and Program

COMPACT OR THRESHOLD

Mongolia

PROGRAM

PRODUCTIVITY A steady stream of poor rural Mongolians are abandoning traditional nomadic herding practices and migrating to the cities in search of better lives. In peri-urban pasture lands near urban centers, Mongolia's tradition of open access pasture use, combined with the influx of migrants' herds, has led to overgrazing and triggered interest in new land-use regimes that will encourage investment, improved land use, and higher agricultural productivity. Mongolia's pasture lands are owned by the state. The Peri-Urban Rangeland Project, or PURP, introduced a system of leasing peri-urban pasture lands to Herder Groups, and provided key infrastructure and training to improve rangeland and livestock management, productivity and, ultimately, farm income. **PHASE I** The MCC compact with Mongolia was a five-year investment (2008-2013) of \$285 million in five projects: Energy and Environment, Health, North-South Road, Property Rights, and Vocational Education. The \$27.1 million Property rights Project included three main activities: (i) Improving the formal system for privatizing and registering land rights; (ii) Helping residents of lower income ger district areas privatize and register their land plots; (iii) Lease pasture land to groups of herders in peri-urban areas, and provide key infrastructure and training to improve livestock productivity and sustainable use of the range resource. The \$12.1 million Peri-Urban Rangeland Project activity represents three percent of the total compact, and was further split into two phases: Phase 1 covering the areas around Darkhan, Erdenet, and Ulaanbaatar cities, and Phase 2 covering the areas around Choibalsan and Kharkhorin cities. Phase 1 of the Peri-Urban Rangeland Project is the subject of the results described here. **PHASE II** The MCC compact with Mongolia was a five-year investment (2008-2013) of \$285 million in five projects: Energy and Environment, Health, North-South Road, Property Rights, and Vocational Education. The \$27.1 million Property rights Project included three main

activities: (i) Improving the formal system for privatizing and registering land rights; (ii) Helping residents of lower income ger district areas privatize and register their land plots; (iii) Lease pasture land to groups of herders in peri-urban areas, and provide key infrastructure and training to improve livestock productivity and sustainable use of the range resource. The \$12.1 million Peri-Urban Rangeland Project activity represents three percent of the total compact, and was further split into two phases: Phase 1 covering the areas around Darkhan, Erdenet, and Ulaanbaatar cities, and Phase 2 covering the areas around Choibalsan and Kharkhorin cities. Phase 2 of the Peri-Urban Rangeland Project is the subject of the results described here.

MCC SECTOR

Land (Land)

PROGRAM LOGIC

PRODUCTIVITY Specifically, PURP entails the following: ·strengthening of the legal framework and environment for pastureland management and long term leasing of peri-urban pastureland to herders; ·identification of suitable sites (tracts of pasture land) for leasing in each peri-urban area; ·selection of up to 465 Herder Groups to receive 15-year leases to the tracts of pasture land; ·installation of wells and supply of materials for construction of fences and animal shelters on the leased pasture land; ·training of Herder Groups to improve their understanding of leasehold rights and responsibilities, and to improve their skills in pasture land management, herd productivity, and business and marketing. This training included stock density management, monitoring pasture land carrying capacity, well operation and maintenance, capturing precipitation run-off, fodder/feed storage techniques, proper animal health and vet services, and business and marketing plans. Also, local land and agricultural officials received training on their related responsibilities; and ·identification and management of environmental, social, health and safety impacts, consistent with MCC Environmental Guidelines, MCC Gender Policy and the World Bank Operational Policy on Involuntary Resettlement (O.P. 4.12). **PHASE I** Increase the security and capitalization of land assets held by lower-income Mongolians, and increase peri-urban herder productivity and incomes **Outcomes:** (1) Increased land right formalization and (2) Optimized peri-urban rangeland carrying capacity and range management **Key outcomes** to be evaluated include a) herder household income, b) herd mortality rate, c) herd productivity, as measured, for example, by liters of milk per dairy cow, d) livestock and rangeland management practices, such as use of rangeland within its carrying capacity, e) investments in rangeland, capital, and technology for future business activity, and f) land quality as measured, for example, by grass yield and vegetation composition. **PHASE II** Property Rights Project: Increase the security and capitalization of land assets held by lower-income Mongolians, and increase peri-urban herder productivity and incomes **Outcomes:** (1) Increased land right formalization and (2) Optimized peri-urban rangeland carrying capacity and range management **Key outcomes** to be evaluated include a) herder household income, b) herd mortality rate, c) herd productivity, as measured, for example, by liters of milk per dairy cow, d) livestock and rangeland management practices, such as use of rangeland within its carrying capacity, e) investments in rangeland, capital, and technology for future business activity, and f) land quality as measured, for example, by grass yield and vegetation composition.

PROGRAM PARTICIPANTS

PRODUCTIVITY: Herder groups **PHASE I:** Beneficiary herders in these areas were chosen through a non-randomized idiosyncratic process

Sampling

Study Population

Productivity Herder groups in intervention areas Phase 1 Herder households in rural Mongolia, in the areas around Ulaanbaatar, Darkhan, and Erdenet cities. Phase 2 All households that were members of the 328 herder groups that applied to the PURP in the Phase II areas. And two neighbor households of these groups that lived within 2 km of the lease area boundaries. Modification for Wave 2: Sampling of neighbor households was extended to 5 km distance from lease area boundaries, due to low rates of successful neighbor interview in the baseline survey.

Sampling Procedure

PRODUCTIVITY

The design encompassed a two-stage randomized selection process to determine which Herder Groups will receive the leasing slots that are available for the project. In the first stage of the design, all Herder Groups located in areas deemed fit for the project were allowed to submit applications for the available slots. These applications are cleared as meeting environmental and social assessment criteria and were scored by local selection committees, according to a set of predefined criteria. Those that pass this stage were short-listed for the second stage of selection. In the second stage of selection, the lease slots were randomly assigned to the short-listed candidates. Some candidates were randomly selected to receive a leasing slot (the Treatment group) while other candidates were not (the Control group). Random assignment led to the creation of two virtually identical groups at baseline. The only difference was that the Treatment group was offered the lease and other associated project assistance while the other group (the Control group) was not. As a result, any changes observed between the two groups over time could be attributed to the project.

PHASE I

BASELINE

- 1) All herder households that applied to participate in the PURP Phase 2 were included in the survey (total 1240 interviewed out of 1492 targeted)
- 2) applicants who did not pass the full screening process and so were rejected from the project (total 345 interviewed out of 628 targeted)
- 3) neighbor herder households of accepted and rejected groups (total 326 interviewed out of 532 targeted)
- 4) a random sample of herder households from soums where the project was being implemented (total 1649 interviewed out of 1895 targeted).

FOLLOW-UP

- 1) All herder households that participated in Phase 1 of PURP were included in the survey
- 2) Non-project households that were interviewed in the baseline survey, were also included in the follow-up survey. Response rate for this category is lower because some households were deemed "low priority" based on propensity score matching with project households. See the Phase 1 Follow-up report for more details on the sampling procedure.

PHASE II

BASELINE:

All households that were members of groups that applied to the project were included in the survey (total 923 interviewed). Moreover two neighbor households were intended to be surveyed for each group, randomly chosen from a list provided by a firm that had mapped the households in the areas (total 420 interviewed). For project applicants, power calculations were performed for one key outcome variable, average daily milk yield per milking cow (liters): Baseline value = 2.19, Std Dev. = 1.3, MDE = 0.25

FOLLOW-UP (Wave 2):

Sample from baseline was augmented by any PURP treatment and control households that were missed in the baseline survey (total 24).

Additionally, since few groups in the baseline survey had two successful neighbor interviews, neighbors were re-sampled in Wave 2. If a group had one or two neighbors interviewed in the baseline survey, then the same neighbors were to be interviewed in Wave 2. If the group did not have a full set of two neighbors in the baseline, then a list of all neighbor

households within ten kilometers of the lease area were given by the herder group leaders. The survey firm then attempted to locate these households. The first two households within 5 kilometers of the lease boundary were to be interviewed. If there were not two households within 5 kilometers, then neighbors up to ten kilometers away could be interviewed. In total 143 new neighbors were added to the sample for Wave 2.

Deviations from Sample Design

PHASE II

BASELINE:

Some groups did not have two neighbors within 2km of their lease area boundary. In these cases sometimes less than two neighbors were interviewed per group. This was especially the case in the Choibalsan peri-urban area, because households are spread very widely apart.

Response Rate

PHASE I

Baseline: Overall response rate for the Household Survey was 73%

Follow-up: Overall response rate for the Household Survey was 87%

PHASE II

BASELINE:

92.6% (Treatment households)

89.1% (Control households)

72.1% (percent of Treatment groups with at least one neighbor interview)

71.7% (percent of Control groups with at least one neighbor interview)

Notes:

-response rates for neighbors differed substantially by peri-urban area, and were much lower in Choibalsan area (45%) compared to Kharkhorin area (86%)

FOLLOW-UP (Wave 2):

90.3% (Treatment households)

82.4% (Control households)

84.8% (percent of Treatment groups with at least one neighbor interview)

85.2% (percent of Control groups with at least one neighbor interview)

Notes:

-these are listed as a proportion of the original baseline sample list, augmented with new households discovered during the follow-up survey

-response rates for neighbors differed substantially by peri-urban area, and were much lower in Choibalsan area (64%) compared to Kharkhorin area (96%)

Questionnaires

Overview

Productivity

The PURLS (Peri-Urban Rangeland Leasing Survey) was used to collect data on the behavior and characteristics of Herder Groups in both the Treatment and Control groups. The outcomes of the herder households in the Treatment and Control groups were compared to assess the impacts of the program.

Phase 1

Household questionnaire - collects basic socio-economic and key herding related outcomes from the households (in Mongolian), Herder Group Leader questionnaire - collects information about group members and their joint business activities (in Mongolian), Soum Governor questionnaire - collects information about soum level demography, livestock census, land information, and development projects (in Mongolian)

Phase 2

Household questionnaire - collects basic socio-economic and key herding related outcomes from the households (in Mongolian)

Herder Group Leader questionnaire - collects information about group members and their joint business activities (in Mongolian)

Soum Governor questionnaire - collects information about soum level demography, livestock census, land information, and development projects (in Mongolian)

Data Collection

Data Collection Dates

Start	End	Cycle
2011-06-06	2011-06-21	Site selection and collected site characterization data for Phase I
2011-06-07	2011-06-19	Collected Line-point intercept data for Phase I
2012-05-03	2012-05-21	Site selection and collected site characterization data for Phase II
2012-08-15	2012-09-09	Collected Line-point intercept data for Phase II
2012-08-14	2012-09-09	Production data for Phases I and II (Fall 2012)
2013-04-16	2013-05-12	Production data for Phases I and II (Spring 2013)
2013-08-17	2013-09-13	Production data for Phases I and II (Fall 2013)
2014-04-13	2014-05-05	Production data for Phases I and II (Spring 2014)
2012-01-30	2012-04-21	Household & Group Leader Baseline (Phase 2 - Wave 1)
2014-05-04	2014-08-04	Household & Group Leader Follow Up (Phase 2 - Wave 2)
2010-09-03	2011-06-14	Household (Phase 1 - Baseline)
2012-12-10	2013-04-26	Household (Phase 1 - Follow Up)

Data Collection Notes

PRODUCTIVITY

Data were collected using the Line-point Intercept method (Herrick, J. E., Van Zee, J. W., Havstad, K. M., Burkett, L. M., & Whitford, W. G. (2005). Monitoring manual for grassland, shrubland and savanna ecosystems. Vol. I: Quick start. USDA- ARS Jornada Experimental Range, Las Cruces, NM: Distributed by University of Arizona Press.) and Plant Production method (Herrick, J. E., Van Zee, J. W., Havstad, K. M., Burkett, L. M., & Whitford, W. G. (2005). Monitoring manual for grassland, shrubland and savanna ecosystems. Vol. II: Design, supplementary methods and interpretation. USDA-ARS Jornada Experimental Range, Las Cruces, NM: Distributed by University of Arizona Press.). The Plant Production method varied from the standard method in that all plants were clipped at 1-cm height from the soil surface, except shrubs and sub- shrubs. Nine plant functional groups were differentiated on each 50-cm x 100-cm quadrat (subplot). The nine plant functional groups are defined below:

1. All shrub species + All sub-shrub species (no Artemisia species). Only leaves plus previous year's woody growth (i.e., terminal nodes that grew last year) was clipped. Older woody material was not removed.
2. All Potentilla species combined.
3. Artemisia frigida only.
4. All other Artemisia species combined, including annual Artemisia species.
5. All remaining forb species combined.
6. All Stipa species combined.
7. All other grass species combined.
8. All Carex species combined.
9. All other annual plant species combined.

Questionnaires

Productivity

The PURLS (Peri-Urban Rangeland Leasing Survey) was used to collect data on the behavior and characteristics of Herder Groups in both the Treatment and Control groups. The outcomes of the herder households in the Treatment and Control groups were compared to assess the impacts of the program.

Phase 1

Household questionnaire - collects basic socio-economic and key herding related outcomes from the households (in Mongolian), Herder Group Leader questionnaire - collects information about group members and their joint business activities (in Mongolian), Soum Governor questionnaire - collects information about soum level demography, livestock census, land information, and development projects (in Mongolian)

Phase 2

Household questionnaire - collects basic socio-economic and key herding related outcomes from the households (in Mongolian)

Herder Group Leader questionnaire - collects information about group members and their joint business activities (in Mongolian)

Mongolian)

Soum Governor questionnaire - collects information about soum level demography, livestock census, land information, and development projects (in Mongolian)

Data Collectors

Name	Abbreviation	Affiliation
Mongolian Society for Rangeland Management	MSRM	Productivity
Joint affiliation of MEC and MCDS LLC		Phase I & Phase II

Supervision

PHASE I

Interviewing was conducted by 2 teams of interviewers. Each interviewing team comprised of 1 team leader, 6 interviewers, and 2 drivers. Each team used 2 four wheel drive vehicles to travel from cluster to cluster (and where necessary within cluster). The role of team leader was to ensure the overall coordination and technical oversight of all the tasks, maintain the communication with IPA and MCA-Mongolia, coordinate with local authorities, and make arrangements for accommodation and travel. Additionally, the team leader was responsible for ensuring the quality of data collection by checking all the paper copy of questionnaires that are filled out by interviewers at the end of everyday.

PHASE II

Interviewing was conducted by 2 teams of interviewers. Each interviewing team comprised of 1 team leader, 6 interviewers, and 2 drivers. Each team used 2 four wheel drive vehicles to travel from cluster to cluster (and where necessary within cluster).

The role of team leader was to ensure the overall coordination and technical oversight of all the tasks, maintain the communication with IPA and MCA-Mongolia, coordinate with local authorities, and make arrangements for accommodation and travel. Additionally, the team leader was responsible for ensuring the quality of data collection by checking all the paper copy of questionnaires that are filled out by interviewers at the end of everyday.

Data Processing

Data Editing

PRODUCTIVITY

Ericha Courtright, the Database for Inventory, Monitoring, and Assessment (DIMA) specialist at the USDA, performed additional data error checking and data cleaning with the help of Justin Van Zee and the MSRM researchers on each set of data after it was collected.

PHASE I

Data editing took place at a number of stages throughout the processing, including:

- a) Field check by survey firm team leaders
- b) Checking the discrepancies of 1st and 2nd data entry
- c) Internal logic check by survey firm
- d) Manual data entry check by IPA
- e) Logic control check by IPA
- f) Data cleaning by IPA
- g) Check of outliers by IPA

PHASE II

Data editing took place at a number of stages throughout the processing, including:

- a) Field check by survey firm team leaders
- b) Checking the discrepancies of 1st and 2nd data entry
- c) Internal logic check by survey firm
- d) Manual check by IPA
- e) Logic control check by IPA
- f) Data cleaning by IPA

BASELINE

All surveys were checked for logical consistency by interviewer supervisors in the field, the day they were collected. If a survey contained inconsistent answers, the respondent was re-interviewed to clarify the problematic questions.

FOLLOW-UP

Consistency checking, including skip patterns and restricted value ranges, when applicable, were programmed into the survey software.

Several types of missing value were recorded. These are operationalized as extended missing values in the Stata datasets.

Note: Questions that were accurately skipped (.s) were generally not coded for the baseline survey and were instead left blank. All valid skips were coded in the follow-up survey.

Numeric missing value code is given first (followed by string code in parentheses)

.s (.skip) -- Question was skipped according to a correct skip pattern

.r (.refusal) -- respondent refused to give a valid answer to the question

.d (.don't know) -- respondent did not know the answer to the question

.q (.qre refused) -- respondent refused to give answers to an entire section of the questionnaire

Other Processing

PRODUCTIVITY

After each field data collection, MSRM researchers entered the data into the DIMA, an Access program developed by USDA Jornada Experimental Range (JER), and modified for the MCC Mongolia project to produce reports of different types and scales (<<http://jornada.nmsu.edu/monit-assess/dima/download>>).

PHASE I

Data entry was conducted by 6 data entry staff. All the data entry was conducted at Survey firm internally developed software, which was approved by IPA. First all the questionnaires were scanned and entered twice by 2 different data entry staff. Then the two entries were reconciled to produce a third dataset. Next, IPA took a random sample of 1500 data points from his third dataset and manually checked them against the paper copies of the questionnaires. The data was accepted from the data collection contractor when the error rate found by the manual check was below 0.5%.

PHASE II

BASELINE:

Data entry was conducted by 6 data entry staff. All the data entry was conducted at Survey firm internally developed software, which was approved by IPA. First all the questionnaires were scanned and manually entered twice by 2 different data entry staff. Then the two entries were reconciled to produce a third dataset. Next, IPA took a random sample of 1500 data points from his third dataset and manually checked them against the paper copies of the questionnaires. The data was accepted from the data collection contractor when the error rate found by the manual check was below 0.5%.

FOLLOW-UP (Wave 2):

Data collection was conducted on tablets and thus data was entered directly. Interviews were audio-recorded and a random sample of audio recordings were checked against the dataset to verify data integrity. Errors were scored based on their severity and the average error rate was required to fall below a preset threshold.

Data Appraisal

No content available